REMARKS/ARGUMENTS

Reconsideration and allowance of the above-identified application are respectfully requested. Upon entry of this Amendment, claims 1-20 will be pending.

The Examiner has rejected claims 1-20 under 35 U.S.C. §101 as being directed to non-statutory subject matter. The Examiner relies largely on In re Warmerdam, and specifically, that court's statement that "taking several abstract ideas and manipulating them together adds nothing to the basic equation." In re Warmerdam, 33 F.3d 1354, 1360 (Fed. Cir. 1994). However, this statement is not a dispositive test for whether a claim is directed to statutory subject matter. Rather it is merely an extension of the well established concept that "abstract ideas" (along with natural phenomena and laws of nature) by themselves, cannot be patented.

Congress intended statutory subject matter to "include anything under the sun that is made by man." See Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980). However, the Supreme Court has defined three categories of non-statutory subject matter. They are laws of nature, natural phenomena, and abstract ideas. Diamond v. Diehr, 450 U.S. 175, 185 (1981). A mathematical formula (or mathematical algorithm) alone, viewed in the abstract, is considered unpatentable subject matter. See Diamond v. Diehr, 450 U.S. 175 (1981); Parker v. Flook, 437 U.S. 584 (1978); Gottschalk v. Benson, 409 U.S. 63 (1972). However, the presence of an algorithm or abstract idea by itself does not make a claim unstatutory.

The Court of Appeals for the Federal Circuit has provided the test for whether a claim contains statutory subject matter, or whether the claim merely manipulates abstract ideas. Claims which employ a practical application of a mathematical algorithm to produce "a

useful, concrete, and tangible result" fall within the requirements of §101. State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368 (Fed. Cir. 1998).

In State Street, the data processing system produced a final share price. The patent satisfied §101 because it constituted a "practical application of a mathematical algorithm . . . [by] producing a useful, concrete and tangible result." Id. at 1373.

In the present case, each of the claims produces a useful, concrete and tangible result. Claims 1-2 recite a method of classifying something into one or more classes. It is true that a mathematical manipulation is involved, but that alone is not dispositive. The useful result is the determination of a class to which the thing belongs, and a confidence factor to indicate the certainty that the classification was correct. This is a tangible, concrete, useful result. The specification provides examples of things that can be classified using the method. Images of faces can be recognized. Horse colic can be diagnosed based on symptoms. Many different types of data can be classified using these useful method claims.

The mere fact that abstraction takes place does not render the claim nonstatutory. All data represents abstraction to some degree. The test remains whether the claim produces a useful, concrete, tangible result. Claim 1 has been amended to further clarify that a useful result is obtained. The claim recites determining the class to which a thing belongs, and determining a confidence factor. The claim, as amended, recites the further step of generating a result based on the determining steps. Thus, it should be even more clear after amendment that there is a useful, concrete, tangible result.

Claims 3 and 4 recite a method of training a machine to classify a thing as a member of one or more classes. The useful result is that a machine becomes *trained* to perform a

classifying operation as a result of the method. It matters not that the particular type of thing classified is not spelled out. Applicants are not required to individually claim all of the possible useful permutations of this method. Claim 3 has also been amended to further clarify that there is a useful, concrete, tangible result. That result is that a thing gets classified based on the weights generating during the training of the machine.

Claims 5 and 6 are article of manufacture claims related to claims 1-4. Similarly, they contain statutory subject matter. It matters not which form a claim takes, statutory subject matter is evaluated the same no matter which category it falls under. AT&T v. Excel, 172 F.3d at 1357.

Claims 8 and 9 similarly contain patentable subject matter. Claim 8 is directed to an apparatus for classifying a thing into one or more classes. Like method claim 1, the tangible, concrete, useful result is the classification of something into a class, along with a confidence factor. Claim 8 recites "outputting said most possible class and said confidence factor at said output device." Thus, a tangible, concrete, useful result is output from the apparatus of claim 8. Similarly, claims 9-11 recite an apparatus adapted to be trained to classify a thing. As amended, claim 9 recites that the apparatus classifies a thing as a member of one or more classes based on the generated weights.

Claim 12-14 are directed to neural networks. Neural networks are clearly not merely abstract ideas. Rather, concrete elements are recited, such as "an input layer" and "an output layer," among others.

Claims 15-19 are directed to a universal parallel distributed computation machine. Again, specific physical elements are recited, so these claims are well within §101 scrutiny.

For example, claim 15 recites "an input layer and an output layer, said input layer having a plurality of input neurons." These are physical elements that remove the claim from any suggestion that it merely recites an abstract idea.

Claim 20 recites a method of training a neural network. The tangible, concrete, useful result is a trained neural network. The network is trained by repeating the method steps recited.

The Examiner argues that claims 1-4 and 8-20 are not statutory subject matter because they are not practiced on a computer. However, whether or not something is practiced on a computer is not the relevant inquiry. Applicant is unaware of any requirement that methods be practiced on a computer. Rather, the inquiry, as stated above, is whether the claim produces a tangible, concrete, useful result. In the AT&T case cited by the Examiner, Excel incorrectly argued that process claims were not patentable because they lacked physical limitations. This reflected a misunderstanding of the law. Since the claims at issue were directed to a process, a structural inquiry was not necessary. AT&T, 172 F.3d at 1359. Similarly in this case, no structural inquiry is necessary. The methods claimed are not required to be practiced on a computer.

The Examiner suggests that the use of the word "thing" makes several of the claims unpatentable. On the contrary, nothing about the word "thing" prevents a claim from being patentable. Even if the word "thing" represents an abstract idea, the relevant inquiry is whether the "thing" is manipulated to produce a tangible, concrete, useful result. In this case, each claim produces just such a result, as discussed above. Applicants are entitled to be their own lexicographer, and the word "thing" accurately represents that a wide variety of things

can be classified according to embodiments of the present invention. Furthermore, Applicants are unaware of any specific prohibition of the word "thing." A search of the Patent Office patent database reveals 176 patents that have issued from 1976 to present with the word "thing" in the claims. Furthermore, Applicant is entitled to be his own lexicographer. Therefore, Applicant understands that the use of the word "thing," without more, does not prevent a claim from being directed to statutory subject matter. The word "thing" conveys that the claims are intended to cover a wide variety of classifiable "things." The generic word "thing" is appropriate, since the focus of the claims are not the particular type of "things" that are classified, but rather the manner in which they are classified. As explained above, each of the claims are directed to one of the four statutory classes of subject matter, and each of the claims produce a useful, concrete, tangible result.

The Examiner argues that claims require a transformation of data to qualify as statutory subject matter. On the contrary, transformation is not an inevitable requirement, but merely one *example* of how a mathematical algorithm may bring about a useful application. AT&T, 172 F.3d at 1358.

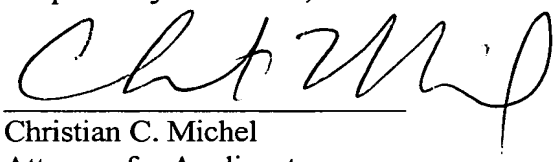
The Examiner relies on Warmerdam for the proposition that "taking several abstract ideas and manipulating them together adds nothing to the based equation." However, that proposition is not decisive in this case. Warmerdam was decided long before the State Street Bank decision. The court was not considering the facts of that case under the current "useful, concrete, tangible result" analysis. Furthermore, the Examiner has not given a reason why the claims merely "take several abstract ideas and manipulate them together." Rather, the Examiner has simply stated that the claims fail §101 muster, without further explanation. The

claims of the present application are not merely taking abstract ideas and manipulating them together. As described above, each of the claims describes are recites a useful, concrete, tangible result.

The Examiner has rejected claims 1-20 under 35 U.S.C. §112, first paragraph, due to the §101 rejection. Based on the arguments above, Applicant believes the §101 rejection should be withdrawn. Similarly, the rejection under §112 should also be withdrawn. The specification enables one of ordinary skill in the art to practice the invention as claimed. The specification also provides several examples of types of data sets which can be used by embodiments of the invention to classify something into one or more classes, and to provide a confidence factor, among other useful results. Applicants respectfully request that this rejection be withdrawn.

In view of the above, it is believed that each of the claims are directed to statutory subject matter, and that the application enables one of ordinary skill in the art to use the invention. The Examiner is respectfully requested to remove the rejections under 35 U.S.C. §§101 and 112 based on the above arguments. Applicant believes the application is in condition for allowance and notice to this effect is respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully Submitted,



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Dated: June 21, 2004